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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,136	10/14/2003	Joseph B. Rowlands	BP 3247	4505

34399 7590 12/04/2007
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EXAMINER

NGUYEN, TANH Q

ART UNIT	PAPER NUMBER
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2182

MAIL DATE	DELIVERY MODE
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12/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/685,136

Applicant(s)

ROWLANDS, JOSEPH B.

Examiner

Tanh Q. Nguyen

Art Unit

2182

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2007.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 6, 7, 10, 12, 15 and 16 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1, 3, 6, 7, 10, 12, 15 and 16 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 14 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: "data said written" in line 15 should be replaced with --wherein said written data-- for grammar and for consistency with line 16 of claim 10.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 15-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are indefinite because claim 15 depends on claim 11, which is cancelled.

The rejections that follow are based on the examiner's best interpretation of the claims.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed

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publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 3, 6, 7, 10, 12, 15, 16 are rejected under 35 U.S.C. 102(a) and 35 U.S.C. 102(e) as being anticipated by Sano et al. (US 2003/0105828).

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

6. As per claim 1, Sano teaches a system for managing data in multiple data processing devices using common data paths [FIGs. 1-3], comprising:

a first data processing system [10B, FIG. 3] comprising a memory [24B - FIG. 3], wherein said memory comprises a cacheable coherent memory space [paragraph [0071]]; and

a second data processing system [10A, FIG. 3] communicatively coupled to said first data processing system, said second data processing system comprising at least one bridge [32 of system 10A, FIG. 3], wherein said bridge is operable to perform an uncacheable remote access to said cacheable memory space of said first data

processing system [paragraph [0070] teaches noncoherent remote access, last 2 lines of paragraph [0164] teaches uncacheable transaction being treated as noncoherent transaction, and paragraph [0071] teaches noncoherent remote access to cacheable memory space of first data processing system, hence uncacheable remote access to cacheable memory space of first data processing system]; and

wherein said uncacheable (noncoherent) remote access performed by said bridge comprises writing data to said memory of the first data processing system for incorporation into the cacheable coherent memory space of the first data processing system [paragraph [0071]];

wherein said data written by said bridge during said uncacheable remote access participates in a cacheable coherent memory protocol [MESI protocol or MOESI protocol, paragraph [0042]] in said cacheable coherent memory space;

wherein said data written by the bridge during said uncacheable remote access is processed by said first data processing system to convert the data to conform to a cacheable coherent memory protocol in the cacheable memory space, and wherein the converted data in said cacheable coherent memory space is accessed by an agent [32B of system 10B] subsequent to said conversion [paragraphs [0070]-[0071]].

wherein the remote access by said bridge to perform said data write is performed in accordance with a set of predetermined ordering rules (Note that Sano above teaches access to the cacheable coherent memory space. Because write access to the cacheable coherent memory space requires the data to be written in accordance with a set of predetermined ordering rules for maintaining coherency, Sano teaches the

remote access by the bridge to perform said data write being performed in accordance with a set of predetermined ordering rules).

7. As per claims 3, 6, 7, Sano teaches the uncacheable (noncoherent) remote access comprising reading data from the cacheable coherent memory space of the first data processing system [paragraph [0085], lines 4-7; paragraph [0086], lines 1-5; paragraph [0095]];

the bridge [32 of system 10A] producing the remote access [performing the remote uncacheable access], and the agent [32 of system 10B] consuming the access, hence a producer-consumer protocol;

data written by the bridge comprising a payload [a packet] and a flag [e.g. Wrlrv; paragraph [0164]], with the flag and the payload both residing in the first data processing system.

8. As per claims 10, 12, 15, 16, the claims generally correspond to claims 1, 3, 6, 7, and are rejected on the same bases.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-8, 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (US 6,470,429) in view of Anand (US 6,134,641).

11. As per claim 1, Jones teaches a system for managing data in multiple data processing devices using common data paths [90, FIG. 1], comprising:

a first data processing system [100-106, FIG. 1] comprising a memory [102, 106 - FIG. 1], wherein said memory comprises a cacheable coherent memory space [col. 1, lines 25-27]; and

a second data processing system [110, FIGs. 1-2] communicatively coupled to said first data processing system, said second data processing system comprising at least one bridge [210, FIG. 2], wherein said bridge is operable to perform an uncacheable remote access to uncacheable memory space of said first data processing system.

Jones further teaches the bridge being operable to perform a cacheable remote access to the cacheable coherent memory space of the first data processing system by bus snooping [col. 6, lines 56-59], and bus snooping impacting computer system performance [col. 2, lines 16-17].

Jones does not teach the bridge performing an uncacheable remote access to the cacheable coherent memory space of the first data processing system.

Anand teaches using uncacheable request to access a cache coherent memory space [col. 5, lines 40-45; col. 9, lines 9-12] in order to avoid bus snooping [col. 9, lines 6-7].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform an uncacheable remote access to a cacheable coherent memory space, as is taught by Anand, in order for Jones' system to maintain coherency

while avoiding bus snooping which results in improved performance.

Jones/Anand above teaches access to the cacheable coherent memory space, hence a data write to the cacheable coherent memory space;

Anand teaches the uncacheable access participating in cacheable coherent memory protocol [240, FIG. 2]; conversion of uncacheable address space into cacheable address space to allow an agent to access the cacheable coherent address space of a data processing system [240, FIG. 2];

Jones/Anand above teaches access to the cacheable coherent memory space, hence data being written in accordance with a set of predetermined ordering rules - to maintain coherency.

12. As per claims 3, 6, 7, Jones/Anand above teaches access to the cacheable coherent memory space, hence a data read from the cacheable coherent memory space;

Jones/Anand above teaches the bridge performing an uncacheable request, hence a producer and the agent receiving data (in a data read), hence a consumer, and therefore a producer-consumer protocol;

Jones/Anand above teaches access to the cacheable coherent memory space, hence data written by the bridge comprising a payload; Anand further teaches a flag for indicating an uncacheable request to a cacheable coherent memory space [col. 6, lines 28-31].

13. As per claims 10, 12, 15, 16, the claims generally correspond to claims 1, 3, 6, 7, and are rejected on the same bases.

Response to Arguments

14. Applicant's arguments filed October 18, 2007 have been fully considered but they are not persuasive.

15. Applicant argues with respect to Sano that the examiner has failed to identify "the remote access by said bridge to perform said data write is performed in accordance with a set of predetermined ordering rules". The argument is not persuasive because the examiner asserts that Sano teaches access to the cacheable coherent memory space (which is already supported in the rejections of claims 2-3 in the previous office action), and therefore has identified that Sano teaches access to the cacheable coherent memory space. Because write access to the cacheable coherent memory space requires the data to be written in accordance with a set of predetermined ordering rules for maintaining coherency, Sano teaches the remote access by the bridge to perform said data write being performed in accordance with a set of predetermined ordering rules.

Note that the examiner has included the clarification of the rejection of this limitation in the rejection of claim 1 above. Note further that there is no specificity to the set of predetermined ordering rules, and coherency requires just any set of predetermined ordering rules.

16. Applicant argues with respect to Anand that the cited portion of Anand states that "the non-cacheable block of system memory" may be addressed without any coherency problem. The argument is not persuasive because "the non-cacheable block of system memory may be addressed without any coherency problem" is considered by the

examiner as an uncacheable remote access, and because the non-cacheable address block is created in a normally cacheable system memory space - hence the normally cacheable system memory space being accessible by an uncacheable remote access without any coherency problem.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tanh Q. Nguyen whose telephone number is 571-272-4154. The examiner can normally be reached on M-F 9:30AM-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Alford Kindred can be reached on 571-272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TANH Q NGUYEN
PRIMARY EXAMINER
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November 26, 2007